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RESTRICTIONS ON ANAPHORA AND OTHER PROBLEMS

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1.0 INTRODUCTION

I have made it clear in Kato (1982) that Principle of Anaphora (PA) and Anaphora Restriction I (AR I) are indispensable to interpret the anaphoric relation of definite NPs in the sentences below :

(1) *I talked to *him* about *John*.
(2) *On *him*, Bill depended for *John's* help.

Since neither him nor the full NP c–commands the other, the syntactic restriction on anaphora proposed in Reinhart (1976, 1981, 1983) incorrectly predicts that coreference between pronouns and full NPs should be possible.

In this paper, I will propose one more restriction on the anaphoric relation (Anaphora Restriction II). Further, I will show that by AR I, AR II and PA, we can consistently explain the cases which Reinhart's restriction cannot handle as well as the cases which it can. I will also show that a linguistically significant generalization can be achieved by incorporating these constraints into the grammar of English. To put it more concretely, we can say that the definite pronouns are, fundamentally, used anaphorically in English.

1.1 ANAPHORA RESTRICTION II

1.1.1. *Formulation of Anaphora Restriction II*: Let us first consider the apparent counterexamples to Principle of Anaphora (PA) proposed in Kato (1982).

(1) Principle of Anaphora (PA):
Principle of Anaphora (PA)
NP_1 and NP_2 are noncoreferential unless the perceptual order $[\ldots [\overset{NP_1}{\text{antecedent}}] \ldots [\overset{NP_2}{\text{anaphor}}] \ldots]$ is kept on the level of perceptual processing.

(2) Rosa is kissing *him* passionately in *Ben's* high school picture.

Since the sentence in (2) apparently has the structural order [. . . anaphor . . . antecedent . . .], it is incorrectly marked as unacceptable by PA. Closer examination, however, reveals that the PP in (2) is a S−PP, which originates in sentence initial position. We can thus assume that the S−PP, *in Ben's high school picture*, has been moved to sentence final position. Thus, the surface structure of (2) is as follows:

(3) $[_{pp}$ e] Rosa is kissing him passionately in Ben's high school picture.

It is obvious from the sentences below that coreference is permissible in cases where the antecedents are in S−PP's, even if the sentence has the structural order [. . . anaphor . . . antecedent . . .]. Coreference is blocked in the cases where antecedents are in VP−PP's:

(4) We sent *him* to West Point in order to please *Ben's* moth-

er. (S−PP)

(5) We'll just have to fire *him* whether *McIntosh* likes it or not. (S−PP)

(6) Rosa won't like *him* anymore, with *Ben's* mother hanging around all the time. (S−PP)

(7) *Rosa tickled *him* in *the baby's* bed. (VP−PP)

(8) *It's time to put *him* in *the baby's* bed. (VP−PP)

From the observations above we can derive the following restriction:

(9) Anaphora Restriction II (AR II)
In the structure $[\,[_{\alpha i}\ e]\ldots NP_2\ldots[_{\alpha i}\ldots NP_1\ldots]\ldots]$, NP_1 and NP_2 are noncoreferential unless NP_1 is the antecedent of NP_2[1].

AR II (9) can correctly account for the sentence in (2), for in (3), *him* = NP_2, and *Ben's* = NP_1. Let us examine the cases presented in (4)−(6). The corresponding surface structures are as follows:

(10) $[_{pp}\ e]$ we sent him to West Point in order to please Ben's mother.

(11) $[_{pp}\ e]$ we'll just have to fire him whether McIntosh likes it or not.

(12) $[_{pp}\ e]$ Rosa won't like him anymore, with Ben's mother hanging around all the time.

In (10), NP_1 = *Ben*, and NP_2 = *him*, in (11), NP_1 = *McIntosh* and NP_2 = *him*, and in (12), NP_1 = *Ben's* and NP_2 = *him*. Thus, AR II (9) correctly marks them as acceptable.

On the other hand, since the PP's in (7)−(8) are VP−PP's,

they are generated in post-verbal position in the base. Thus, they do not leave sentence-initial traces. As a result, neither AR I nor AR II applies to (7) and (8), and Principle of Anaphora correctly marks them as unacceptable, for they violate the perceptual order [. . . antecedent . . . anaphor . . .].

1.1.2. *The relation between the Principle of Anaphora and the Anaphora Restriction II*: I have already made it clear in Kato (1982) that the Principle of Anaphora is a constraint assigned to a component to be called Discourse Grammar, while Anaphora Restriction I should be assigned to Sentence Grammar. I will show that the same reasoning holds with respect to the relation between the Principle of Anaphora and Anaphora Restriction II. Consider the following sentences:

(13) a. Ben's mother has been complaining about her grandson *John*, for he is always flirting with the young house maids. So we sent *him* to West Point in order to please Ben's mother.
b. We sent *him* to West Point in order to please *Ben's* mother.

In (13a), it is most natural to interpret the referent of *him* as *John*, for the preceding discourse encourages the association of *him* with the established topic *John*. This force is stronger than that created by the sentence, which encourages the association of *him* with *Ben's*. Consider sentence (13b). In isolation, it is most natural to interpret the referent of *him* as *Ben*. In this case, it is necessary to resort to an interpretive rule in Sentence Grammar that will give an appropriate interpretation to *him*; namely AR II. As a result, AR II should be assigned to Sentence Grammar.

1.2 Other problems to Reinhart's restriction

Let us consider again examples where the possibilities of coreference vary with the length of the sentence: (Lakoff (1968), Akmajian and Jackendoff (1970) and Wasow (1972))

(14) a. *In *John's* aparment, *he* smokes pot.
b. In *John's* apartment near the railroad tracks in the Pamrapo district of Bayonne N.J., *he* smokes pot.

(15) a. *In *George's* apartment, Mary kissed *him*.
b. In *George's* rotting hovel of an apartment on Scrac Street, Mary finally broke down and kissed *him*.

(16) a. *In *Zelda's* bed, *she* spent her sweetest hours.
b. In the bed which *Zelda* stole from the Salvation Army, *she* spent her sweetest hours.

Reinhart's restriction can correctly account for the unacceptability of the (a)-sentences in (14), (16), for the full NP's are in the c-command domain of the pronouns, and hence must be pronouns in order to be coreferential with the pronouns. In the (b)-sentences in (14), (16) on the other hand, coreference is possible, although the structure of these sentences is basically the same as those underlying the (a)-sentences. Thus, Reinhart's restriction cannot account for these cases.[2]

If we consider the PP's more closely, we find that the PP's in the (a)-sentences are obviously VP-PP's ('place-specifying nonthematic adverbs', in, Kuno's terms (Kuno (1979: 125)), while the PP's in the (b)-sentences seem to switch categories, going from VP-PP's to S-PP's ('scene-setting thematic adverbs', in Kuno's term). The reason this category switch occurs in the cases cited may be that the increase of information in the VP-

PP's about the places in question makes them lose their original function as place specifiers and assume the new role as scene-setters which is typical to S-PP's.

Thus, we can assume the PP's in the (b)-sentences are S-PP's. Since S-PP's are assumed to originate in sentence initial position, the Principle of Anaphora can correctly account for the acceptability of the (b)-cases in (14)-(16).

In passing, the following sentences are apparently counter-examples to AR I, if the PP's are interpreted as having been preposed from sentence final position (namely, if they are interpreted as VP-PP's):

(17) In *Mary's* apartment, a thief assaulted *her*.
(18) From *Mary's* apartment, *she* could see half of Paris.

But the following pairs reveal that the PP's in question function as thematic S-PP's rather than place specifying VP-PP's:

(19) What happened in *Mary's* apartment?
In *Mary's* apartment, a thief assaulted *her*.
(20) Tell me about *Mary's* apartment.
From *Mary's* apartment, *she* could see half of Paris.

Thus, we see that the PP's in (17) and (18) are 'scene-setting thematic' S-PP's. As a result, PA correctly marks (17) and (18) as acceptable, for they keep the perceptual order [...antecedent...anaphor...].

Consider the following examples which Reinhart's restriction cannot account for:

(21) ??We talked about *Rosa's* son to/with *her*.
(22) ??I spoke, in *Ben's* office, to *him*.

(23) ?I referred *Dr. Levin's* students to *him.*

Reinhart admits the deficiency of her restriction as follows:

> I will not attempt here a full survey of anaphora options inside the VP. It seems clear, however, that a fully formal account in terms of branching nodes is not sufficient to determine domain relations in this case. . .I will leave open for further study the questions whether inside the VP, linear order may play (exceptionally) a role in determining anaphora. (Reinhart (1976: 157))

All these sentences are marked incorrectly acceptable by Reinhart's restriction, since neither'NP is in the other's domain. In our approach, the sentences in (21)−(23) have the surface structures in (21)'−(22)':

(21)' We talked about Rosa's son to/with her $[_{pp}$ e]
(22)' I spoke, in Ben's office, to him $[_{pp}$ e]
(23)' I referred Dr. Levin's students to him $[_{pp}$ e]

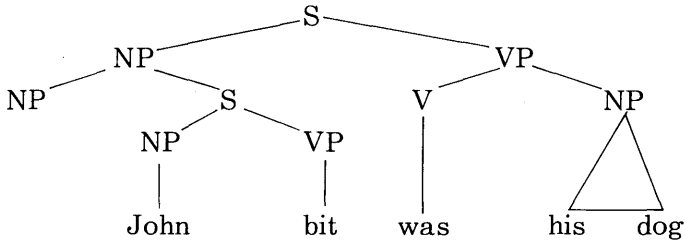
In (21)'−(23)', since the full NP's correspond to NP_2 and the pronouns correspond to NP_1, and the NP_1's are not the antecedents to the NP_2's, AR I correctly marks them low in acceptabillity.

Lakoff points out that cleft sentences show mysterious behavior with respect to coreference (Lakoff (1968: 285−286)):

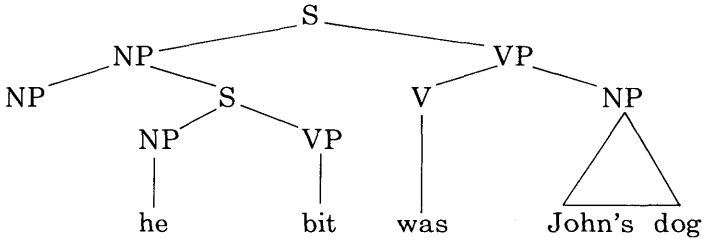
(24) It was *his* dog that *John* bit.
(25) *It was *John's* dog that *he* bit.
(26) *It was *John's* dog, which *Mary* likes, that *he* told *her* about.
(27) *It was *John's* dog, which *she* likes, that *he* told *Mary* about.

According to Emonds (1976), the structures of (24) and (25) are as follows:

(24)'



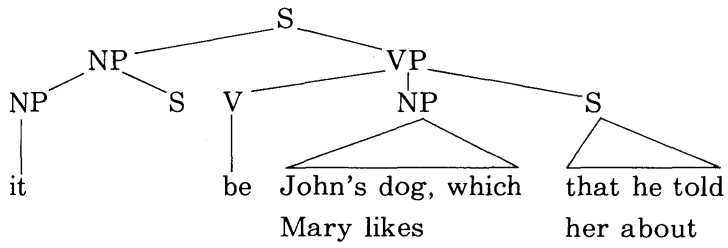
(25)'



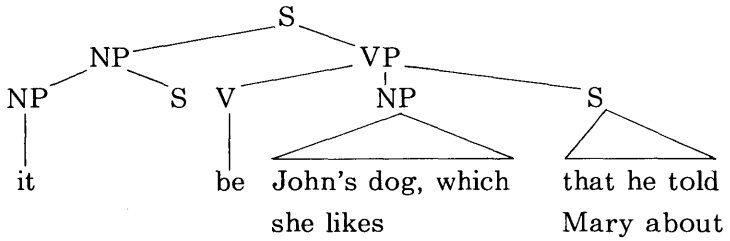
In (24)' since neither *John* nor *his* is in the c-command domain of the other, Reinhart's restriction can correctly account for the acceptability of (24). In (25)', on the other hand, although the structural relation is the same as that of (24)', coreference is blocked. Hence, Reinhart's restriction incorrectly marks the sentence in (25) as fully acceptable.

Consider the structural relations of (26) and (27) represented as in (26)' and (27)':

(26)'



(27)'



In (26)', since neither *John's* nor *he*, and neither *Mary* nor *her* are in one another's c-command domain, Reinhart's restriction incorrectly marks the sentence in (26) as fully acceptable. The same is true in (27)': since neither *John's* nor *he*, and neither *she* nor *Mary* are in one another's c-command domain, Reinhart's restriction cannot account for the unacceptability of the sentence in (27).

Now I will show that AR I, proposed in Kato (1982) as in (28), correctly accounts for the sentences in (24)-(27).

(28) Anaphora Restriction I (AR I)

> In the structure $[_S \ldots [_{\alpha_i} \ldots NP_2 \ldots] \ldots NP_1 \ldots [_{\alpha_i}$ e$] \ldots]$, NP_1 and NP_2 are noncoreferential unless NP_1 is the antecedent of NP_2. (Where $[_{\alpha_i}$ e$]$ is a trace left by preposing transformations)

Consider first the corresponding surface structures:

(24)" It was his dog that John bit $[_{NP}$ e$]$

(25)" It was John's dog that he bit $[_{NP}$ e$]$

(26)" It was John's$_i$ dog, which Mary$_j$ likes, that he told her about $[_{NP}[_{NP_i}$ e$] \ldots [_{NP_j}$ e$]]$

(27)" It was John's$_i$ dog, which she$_j$ likes, that he told Mary about $[_{NP}[_{NP_i}$ e$] \ldots [_{NP_j}$ e$] \ldots]$

In (24)", since NP_1 = *John*, and NP_2 = *his*, and NP_1 is the antecedent of NP_2, AR I correctly marks the sentence in (24) acceptable. In (25)", since NP_1 = *he* and NP_2 = *John's*, and NP_1 is not the antecedent of NP_2, AR I correctly accounts for the unacceptability of the sentence in (25). In (26)", in the case of the pair *John's* and *he*, NP_1 = *he* and NP_2 = *John's* and NP_1 is not the antecedent of NP_2; in the case of the pair *Mary* and *her*, NP_1 = *her* and NP_2 = *Mary*, and NP_1 is not the antecedent of NP_2, thus, AR I correctly marks the sentence in (26) unacceptable on two accounts. In (27)", although in the case of the pair *Mary* and *she*, AR I marks it acceptable because NP_1 = *Mary* and NP_2 = *she* and NP_1 is the antecedent of NP_2, in the case of the pair *John's* and *he*, AR I blocks coreference between *John's* and *he*, since NP_1 = *he* and NP_2 = *John's*, and NP_1 is not the antecedent of NP_2.

In this section, I have demonstrated that Anaphora Restriction I can correctly account for all the examples in (14)–(16), (21)–(23) and (25)–(27) which Reinhart's restriction cannot account for. It is evident from the observations above that the deficiency of Reinhart's restriction is due to its crucial dependence on the notion "first branching node".

1.3 Additional predictions made by Anaphora Retriction I and the Principle of Anaphora

1.3.1 *PP–extraction and anaphora*: Consider the examples below, where in the (b) and (c) cases, have been extracted from embedded sentences:

(29) a. In *Rosa's* wedding picture, *she* looks attractive. (S–PP)
b. In *her* wedding picture, *Rosa* hopes that *she* will look attractive.
c. *In *Rosa's* wedding picture, *she* hopes that *she* will look attractive.

(30) a. In *Ben's* family, *he* is considered a genius. (S–PP)
b. In *his* family, *Ben* told me that *he* is considered a genius.
c. *In *Ben's* family, *he* told me that *he* is considered a genius.

Since the PP's in question are all S–PP's, the sentences in (29b), (29c), (30b), and (30c) have the following surface structures:

(29)' b. In *her* wedding picture, *Rosa* hopes that $[_{pp}$ e] *she* will look attractive.
c. In *Rosa's* wedding picture, *she* hopes that $[_{pp}$ e] *she* will look attractive.

(30), b. In *his* family, *Ben* talk me that $[_{pp}$ e] *he* is considered a genius.
c. In *Ben's* family, *he* told me that $[_{pp}$ e] *he* is considered a genius.

The extracted S–PP's leave traces in the initial position of the embedded sentences. In these cases where preposing transformations are involved, we resort to AR I. In (29b)', NP_1 = *Rosa* and NP_2 = *her*. and in (30b)', NP_1 = *Ben* and NP_2 = *his*, and the NP_1's are the antecedents of the NP_2's. Thus, AR I correctly marks (29b) and (30b) as acceptable. On the other hand, in (29c)', NP_1 = *she* and NP_2 = *Rosa*, and in (30c)', NP_1 = *he* and

NP_2 = *Ben's* and in both cases the NP_1's are not the antecedents of the NP_2's. Hence coreference is correctly blocked by AR I.

Compare the following sentences where the application of Question Formation changes the acceptability of the sentences:

(31) When *she* finishes school, *Rosa* promised Ben that *she* will go to London.

(32) *When *she* finishes school, has *Rosa* promised Ben that *she* will go to London?

The surface structure of (31) and (32) are as follows:

(31)' When *she* finishes school, *Rosa* promised Ben that $[_{pp}$ e] *she* will go to London.

(32)' When *she* finishes school, has *Rosa* promised Ben that $[_{pp}$ e] *she* will go to London.

In (31)', since NP_1 = *Rosa* and NP_2 = *she*, and NP_1 is the antecedent of NP_2, AR I correctly marks (31) as acceptable. In (32)', since NP_1 = *Rosa* and NP_2 = *she*, and NP_1 is the antecedent of NP_2, AR I marks (32) acceptable. But this is incorrect, and we have an apparent counterexample to AR I. Closer examination, however, reveals the fact that the unacceptability of (32) is due to the syntactic constraint on the COMP Theory, rather than coreference between *Rosa* and *she*. The extracted PP (*when she finishes school*) is a S−PP of the *that*−clause and, at the same time, a VP−PP, because the S node which dominated the PP before preposing is dominated by the matix VP. Hence, the extracted PP behaves like a VP constituent and is attached to the COMP position which is already filled by Question marker. This causes the same problem which was discussed in chapter III, that is, two elements are occupying the COMP at the same time.

In short, (32) has already been marked unacceptable on the level of syntax before the application of the interpretive rule AR I.

1.3.2 *Topicalization and anaphora*: Ross formulates Topicalization as follows:

(33) *Topicalization*

X---NP---Y
1 2 3 ----optional
2#[1 ϕ 3] (# stands for Chomsky adjunction)
(Ross (1967c: 232))

Given Topicalization as a transformation, where do topicalized elements attach within the sentential structure? The application of *WH*-Question Formation to the topicalized sentence answer the question: (Reinhart (1976: 91))

(34) *Rosa, who can stand, anyway!
(35) *Rosa, when did you last see?

The unacceptability of (34) and (35) tells us that the topicalized elements are attached to the COMP position. (34) and (35) are thus unacceptable for the same reason that (32) is unacceptable.

Since Topicalization is a transformation which moves elements into sentence initial position, they leave traces in their original positions. Keeping this in mind, consider the following sentences:

(36) **Sonya, she* denies that Hirschel admires.
(37) **Sonya's* recipes, *she* will never give you.

(38) *Sonya's* recipes, you'll never get from *her*.
(39) *Sonya, her* husband would give his life for.

The surface structures of (36)–(39) are as follows:

(36)' Sonya, she denies that Hirschel admires [$_{NP}$ e]
(37)' Sonya's recipes, she will never give you [$_{NP}$ e]
(38)' Sonya's recipes, you'll never get [$_{NP}$ e] from her
(39)' Sonya, her husband would give his life for [$_{NP}$ e]

In (36)', and (37)', NP_1 = *she* and NP_2 = *Sonya, Sonya's*, and the NP_1's are not the antecedents of the NP_2's. Hence, AR I marks (36) and (37) as unacceptable. In (38)', on the other hand, since NP_1 = *Sonya's* and NP_2 = *her*, and NP_1 is the antecedent of NP_2, AR I correctly marks (38) as acceptable. As for (39)', NP_1 = *her* and NP_2 = *Sonya*, and NP_1 is not antecedent of NP_2. Hence, AR I incorrectly blocks possible coreference in (39). For the moment, I leave this problem open for further study.

1.3.3 *Left Dislocation and anaphora*: Ross formulates Left Dislocation as follows:[3]

(40) *Left Dislocation*

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   X---NP---Y
   1    2    3 ---optional
2#[1    φ    3]    (# stands for Chomsky adjunction)
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There are, however, some linguists who argue that Left Dislocation cannot be a transformation. Reinhart reports that van Riemsdijk and Zwartz (1974) offer several strong arguments to the effect that Left Dislocation cannot be a transformation:

> . . . they suggest that 'left-dislocated' elements are generated in the initial position under a category higher than the S which dominates the rest of the sentence. (Reinhart (1976 : 90))

Rodman (1974) also claims that left-dislocated elements are generated in initial position in the base and proposes the following underlying phrase structure rule :

(41) $\bar{S}$---(X)
where S is the starting symbol of a phrase structure grammar (Rodman (1974 : 21))[4,5]

I adopt here Rodman's analysis of Left Dislocation. Consider the sentences below which contain left-dislocated elements :

(42) (As for) *Sonya, she* denies that Hirschel admires her.
(43) (As for) *Sonya's* recipes, *she* will never give them to you.
(45) (As for) Sonya's recipes, an expert has praised them in the contest.
(46) * (As for) *her, Sonya* denies that Hirschel admires her.
(47) (As for) *Sonya,* John told *Sonya* that Hirschel admires *her.*
(48) (As for) *Harry,* Bill has warned *Harry* that *he* must not steal any more apples.

Since I assume that the left-dislocated elements in (42)-(48) are generated in initial position, the Principle of Anaphora can account for all the sentences in (42)-(48). On the other hand, Reinhart's restriction incorrectly marks (47) and (48) unacceptable, for the second full NP's (*Sonya, Harry*) are in the c-com-

mand domain of the left-dislocated full NP's (*Sonya*, *Harry*). Thus, the second full NP's must be pronouns in order to be coreferential with the left-dislocated full NP's.

1.4 Summary

In 1.1, considering the properties of S-PP's discussed in Kato (1982), I proposed Anaphora Restriction II in order to account for such cases as (2):

(2) Rosa is kissing *him* passionately in *Ben's* high school picture.

I also explained the relation between the Principle of Anaphora and Anaphora Restriction II. In 1.2, I illustrated the inability of Reinhart's restriction to account for sentences which seem to require semantic consideration, sentences with lengthened initial PP's, for example. In 1.3, I demonstrated that the Principle of Anaphora and Anaphora Restriction I and II have broader predictive powers with respect to coreference than Reinhart's restriction.

Footnotes

1. Since I noted in Kato (1982) that I would at present refrain from committing myself to Trace Theory, the fact that AR II (9) might formally violate Proper Binding, proposed in Fiengo (1977: 53), is not of theoretical importance.
2. With respect to this problem, see Kato (1982).

3. Emmonds assumes that Topicalization and Left Dislocation are Root Transformations. (Emmonds (1976 : 31, 33))

4. Since I could not get the original copy of Rodman (1974), I refer to 『海外英語学論叢'76』PP. 7–35 英潮社

5. This phrase structure rule is quite similar in form to that which I proposed with respect to S–PP's in Kato (1980). Semantically, the function of left dislocated elements and S–PP's are also very similar ; namely, both of them are used to represent thematic elements. Thus, it does not seem unreasonable to generalize them and integrate them into one phrase structure rule. I will leave this question open for future study.

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